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| 10/542,441 | 07/15/2005 | Yaogang Chen | 3410-0108PUS1 | 2781 |
| 2292 7590 07/25/2008 BIRCH STEWART KOLASCH & BIRCH PO BOX 747 FALLS CHURCH, VA 22040-0747 | | | | |
| EXAMINER IEVA, NICHOLAS | | | | |
| ART UNIT 2836 | | PAPER NUMBER | | |
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

mailroom@bskb.com

Office Action Summary

Application No.

10/542,441

Applicant(s)

CHEN ET AL.

Examiner

NICHOLAS IEVA

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 17 July 2005.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-10 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-10 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 17 July 2005 is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-8508)
- Paper No(s)/Mail Date _____

- 4) ☐ Interview Summary (PTO-413)
- Paper No(s)/Mail Date _____
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____

DETAILED ACTION

Information Disclosure Statement

1. The information disclosure statement filed 17 July 2005 fails to comply with 37 CFR 1.98(a)(2), which requires a legible copy of each cited foreign patent document; each non-patent literature publication or that portion which caused it to be listed; and all other information or that portion which caused it to be listed. It has been placed in the application file, but the information referred to therein has not been considered.

Claim Objections

2. The claims are objected to because they include reference characters which are not enclosed within parentheses.

Reference characters corresponding to elements recited in the detailed description of the drawings and used in conjunction with the recitation of the same element or group of elements in the claims should be enclosed within parentheses so as to avoid confusion with other numbers or characters which may appear in the claims. See MPEP § 608.01(m).

3. **Claims 7 and 8** are objected to because of the following informalities:

The first two lines of claim 7 include the limitation "is mainly composed of resistances, composite triodes and inductors". Examiner has reason to believe that Applicant intends to mean "comprises resistances, a composite triode and a inductor" instead of "is mainly

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composed of resistances, composite triodes and inductors", and the examination of this claim will be based on this interpretation.

The last line of claim 8 includes the limitation "diode D7-D14 and capacity C7-C14". Examiner has reason to believe that Applicant intends to mean "diodes (D7-D14) and capacitors (C7-C14)" instead of "is diode D7-D14 and capacity C7-C14", and the examination of this claim will be based on this interpretation.

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

6. **Claims 1-4 and 10** are rejected under 35 U.S.C. 103(a) as being unpatentable over **Adachi et al. (US Pub. 2003/0098650)** in view of **Rodrigo et al. (US 4,734,580)** and **Halleck (US 4,729,057)**.

Consider **claim 1**, Adachi et al. discloses an anion generator **1**, which includes casing **2**, interior circuit, ion emitting head (**7 and 7a**); Said casing is composed of insulating case (plastic) and a protective grille **4**; Said interior circuit is composed of power circuit (**26, 3, 16, 17 and 13**) and oscillation boosting circuit **5**, the power circuit provides operating power of the oscillation boosting circuit; the oscillation boosting circuit is composed of oscillation circuit (**37 and 38**), boosting circuit **39** and voltage circuit **40**, the function of oscillation boosting circuit is to generate high-tension used to ionize air through an ion emitting head; Said ion emitting head is a discharge probe (**7 and 7a**); the ion emitting head is connected with the high-tension output terminal of the multilevel dual voltage circuit in the oscillation boosting circuit (Adachi; figures 1, 3, 4, 5 and 9; paragraphs 0059, 0062-0073, 0076-0081, 0086, 0087, 0089, 0090).

However, Adachi et al. does not specifically disclose that the protective grille is a conducting protective grille that is connected to a certain potential and that the voltage circuit is a multilevel dual voltage circuit.

Rodrigo et al. teaches a conducting protective grille **16** that is connected to a certain potential (ground) and a discharge resistance (resistance of wire between ground and grill) that is connected between

said conducting protective grille and an interior circuit (power supply C) (the ground side of the grille is connected to the ground side of the interior circuitry) (Rodrigo; figures 1 and 2; column 2, line 60 – column 3, line 20; column 3, lines 54-67).

Rodrigo also mentions that above imitations provides one with the means to effectively ionize the air in the gap between the tip 7a of the ion emitting head and a conducting protective grill (Rodrigo; column 2, line 60 – column 3, line 20).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have incorporated the teachings of Rodrigo into the anion generator taught by Adachi, because Rodrigo's teachings would have give one the ability to ionize the air in the gap between the tip of the ion emitting head and a conducting protective grill.

However, Adachi and Rodrigo do not specifically disclose that Adachi's voltage circuit is a multilevel dual voltage circuit.

Halleck teaches a multilevel dual voltage circuit 29 (Halleck; figure 4; column 9, lines 24-32).

Halleck also mentions that the above limitation allows one to produce negative ions (anions) at a specific voltage (Halleck; figure 4; column 9, lines 24-32).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have incorporated the teachings of Halleck into the anion generator taught by Adachi and Rodrigo,

because Halleck teaches would have taught an alternative means of producing negative ions (anions) at a specific voltage.

Consider **claim 2**, Rodrigo et al. teaches that said conducting protective grille is manufactured as a separate element (Rodrigo; figures 2 and 5; column 2, line 60 – column 3, line 20; column 3, lines 54-67).

Consider **claim 3**, Rodrigo et al. teaches that said conducting protective grille is made from a conductive material (Rodrigo; column 2, line 60 – column 3, line 20; column 3, lines 54-67).

Consider **claims 4 and 10**, Adachi et al. teaches that said boosting circuit is composed of a sheet piezoelectric ceramic transformer **71** (Adachi; figure 5; paragraphs 0062-0073).

7. **Claims 5 and 6** are rejected under 35 U.S.C. 103(a) as being unpatentable over **Adachi et al. (US Pub. 2003/0098650)** in view of **Rodrigo et al. (US 4,734,580)**, **Halleck (US 4,729,057)** and **O'Neal et al. (US 6,172,891)**.

Consider **claim 7**, Adachi, Rodrigo and Halleck disclose an anion generator as discussed above.

Furthermore, Adachi et al. teaches that said power circuit includes an AC power supply circuit (**26, 3, 16, 17 and 13**) (Adachi; figure 3; paragraphs 0062-0073).

Halleck teaches a power circuit includes an AC power supply circuit or a DC power supply circuit (Halleck; column 2, lines 1-51).

However, Adachi, Rodrigo and Halleck do not specifically disclose that said power circuit includes AC power supply circuit and DC power supply circuit, between which there is a change-over switch.

O'Neal et al. teaches a power circuit that includes AC power supply circuit and DC power supply circuit, between which there is a change-over switch, which can be switched to supply power to a DC operable device (O'Neal; figures 7-8; column 4, line 65 - column 5, line 53).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have incorporated the teachings of O'Neal into the anion generator taught by Adachi, Rodrigo and Halleck, because O'Neal's teachings would have made the overall anion generator more robust by providing one with the flexibility to choose between two different types of power supplies.

Consider **claim 6**, Adachi et al. teaches that said AC power supply circuit is composed of reduce-limiting current circuit **23 and 16**, diode rectifier bridges **17** and filter capacitor **13** (Adachi; figure 3; paragraphs 0062-0073).

8. **Claims 7-9** are rejected under 35 U.S.C. 103(a) as being unpatentable over **Adachi et al. (US Pub. 2003/0098650)** in view of **Rodrigo et al. (US 4,734,580)**, **Halleck (US 4,729,057)**, **O'Neal et al. (US 6,172,891)** and **Knight (US 3,863,169)**.

Consider **claim 7**, Adachi, Rodrigo, Halleck and O'Neal disclose an anion generator as discussed above.

Furthermore, Halleck teaches an oscillation circuit **22 and 23** that comprises resistances **46 and 47**, a triode **23** and an inductor **44**; as the loop capacitance of the oscillation circuit, the input capacitance of a transformer **25 and 27** of a boosting circuit is connected between the base electrode and collecting electrode of the triode, so that the oscillation circuit with transformer can form self-oscillation (Halleck; figures 1 and 4; column 7, line 55 - column 9, lines 32).

However, Adachi, Rodrigo, Halleck and O'Neal do not specifically disclose that the triode is a composite triode.

Knight teaches a composite triode (Knight; figure 1; column 1, lines 3-8; column 2, lines 7-16).

The above limitation would behave like a single transistor but will have a higher current gain. This higher current gain would reduce the base current need to turn-on the triode.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have incorporated the teachings of Knight into the anion generator taught by Adachi, Rodrigo, Halleck and O'Neal, because Knight's teachings would have reduced the current needed to turn-on a triode.

Consider **claim 8**, Halleck teaches that said multilevel dual voltage circuit is composed of diodes **77-81** and capacitors **70-72, 74 and 75** (Halleck; figure 4; column 9, lines 24-32).

Consider **claim 9**, Halleck teaches that through a protective resistance **35**, an ion emitting head **13** is connected to the high-tension output terminal of multilevel dual voltage circuit **29** in a oscillation boosting circuit (**22, 23, 26 and 29**) (Halleck; figures 1 and 4; column 7, line 55 - column 9, lines 32).

Conclusion

9. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. **Joannou (US 2003/0147784)** teaches a portable, battery-operated ion generator that comprises a multilevel dual voltage circuit and an oscillation circuit that comprises resistances, a triode and a inductor. **Taylor et al. (US 2001/0032544)** teaches an AC or DC operated ion generator. **Yehl et al. (US 5,043,840)** teaches an AC or DC operated ion generator that comprises a multilevel dual voltage circuit. **Taylor et al. (US 6,163,098)** teaches a power circuit that includes AC power supply circuit and DC power supply circuit, between which there is a change-over switch, which can be switched to supply power to an oscillation boosting circuit (Taylor; figure 3; column 5, line 59-column 6, line 8; column 4, lines 40-50). Talyor's figure 3 depicts both the AC-operated and DC-operated embodiments of the present invention. A change-over switch must be present in order for Taylor's AC-operated and DC-operated embodiments to work, because Taylor only discloses that his ion generating unit receives only one type of operating power at a given time, either AC or DC.

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Bossard et al. (4,757,422) teaches a stainless steel conducting protective grille that is connected to a certain potential (ground)

10. Any inquiry concerning this communication or earlier communications from the examiner should be directed to NICHOLAS IEVA whose telephone number is (571)270-1270. The examiner can normally be reached on M-TH (7:30am - 5pm), and F (7:30am - 4pm), EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Michael Sherry can be reached on 571-272-2084. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Michael J Sherry/
Supervisory Patent Examiner, Art Unit 2836

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